

U. S. DEPARTMENT OF COMMERCE  
HENRY A. WALLACE, Secretary  
NATIONAL BUREAU OF STANDARDS  
E. U. CONDON, Director

# HARDWARE CLOTH

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COMMERCIAL STANDARD CS132-46

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Effective Date for New Production From April 15, 1946



A RECORDED VOLUNTARY STANDARD  
OF THE TRADE

UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1946

PROMULGATION  
of  
COMMERCIAL STANDARD CS132-46  
for  
HARDWARE CLOTH

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On June 27, 1945, at the instance of the Hardware Cloth and Poultry Netting Institute, a meeting of producers of hardware cloth adopted the proposed commercial standard for this commodity. This was submitted on August 21, 1945, to leading manufacturers, interested Government agencies, and distributor and user organizations for constructive comment. Following adjustment in the light of the comment received, the recommended commercial standard was circulated for written acceptance on January 23, 1946.

Those concerned have since accepted and approved the standard as shown herein for promulgation by the United States Department of Commerce, through the National Bureau of Standards.

The standard is effective for new production from April 15, 1946.

Promulgation recommended.

F. W. Reynolds,  
*Acting Chief, Division of Trade Standards.*

Promulgated.

E. U. Condon,  
*Director, National Bureau of Standards.*

Promulgation approved.

Henry A. Wallace,  
*Secretary of Commerce.*

# HARDWARE CLOTH

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## COMMERCIAL STANDARD CS132-46

### PURPOSE

1. The purpose of this commercial standard is to provide a nationally recognized minimum standard of quality for hardware cloth. It will assist ultimate consumers in determining what sizes of hardware cloth are standard and are regularly produced in sufficient volume to assure reasonably any standard size being readily obtainable in most retail hardware stores and other channels of retail and wholesale trade.

### SCOPE

2. This standard covers materials, workmanship, and dimensional requirements for commercial standard hardware cloth, customarily used for window guards, screen door guards, tree guards, ratproofing, grain bins, industrial machinery guards and numberless other home, farm, and industrial purposes. A recommended form for guaranteeing compliance with this standard is included.

### DEFINITIONS

3. *Hardware cloth*.— $2\times 2$ ,  $3\times 3$ ,  $4\times 4$ ,  $8\times 8$  mesh (size or count); carbon steel, wire mesh; galvanized (zinc-coated) by the hot-dip process after it is woven.

4. *Mesh*.

4a. Mesh is the width of one opening plus the thickness of one wire after it is galvanized; alternatively considered as being the distance from the center of one wire to the center of the next parallel wire. Thus the measurement of the "mesh" in  $2\times 2$  standard hardware cloth is  $\frac{1}{2}$  inch; in  $3\times 3$ ,  $\frac{1}{3}$  inch;  $4\times 4$ ,  $\frac{1}{4}$  inch;  $8\times 8$ ,  $\frac{1}{8}$  inch.

4b. The technical designation of "mesh" (count) is the number of meshes per linear inch in the direction of either the warp or filler wires. Thus  $2\times 2$  "mesh" means that the woven material has two (2) meshes per linear inch,  $3\times 3$  "mesh" has three (3) meshes,  $4\times 4$  "mesh" has four (4) meshes, and  $8\times 8$  "mesh" has eight (8) meshes per linear inch.

4c. When used as a common designation of the "size" of standard hardware cloth the word "mesh" is generically accepted as meaning the number of openings per linear inch.

### MATERIALS AND WORKMANSHIP

5. All standard hardware cloth shall be made of high-grade materials and with good workmanship. It shall be free from any defects that might affect its serviceability. Well-made splices not more

than three-fourths of an inch long and showing no projecting ends (tails) are permissible at any point of any individual wire, provided, however, that the number of splices shall not exceed thirty (30) in any stock roll nor two (2) in any single square foot of finished standard hardware cloth. The metal used for the coating shall be zinc of at least 98 percent purity.

### DETAIL REQUIREMENTS

6. The mesh counts, wire sizes, and weights for standard hardware cloth are as follows:

Metal	Mesh	Diameter of wire (after galvanizing)	Weight
Carbon steel.....	2×2	<i>Inch</i> 0.0410	<i>Lb./100 sq. ft.</i> 29
Do.....	3×3	.0317	28
Do.....	4×4	.0258	27
Do.....	8×8	.0173	24

### WIDTHS

7. Stock widths of all standard sizes of hardware cloth are 24, 30, 36, and 48 inches.

### ROLL LENGTH

8. All standard stock rolls of hardware cloth shall be 100 linear feet in length. No standard stock roll shall contain more than two pieces, and no single piece shall be less than 10 linear feet in length.

### MESH SIZE OR COUNT

9. The mesh size of standard hardware cloth shall be determined by counting the meshes for any interval of one continuous linear foot, in the direction of either the warp or filler wires and dividing the result thus obtained by twelve (12).

### WIRE DIAMETER

10. All wire diameter designations in this commercial standard for hardware cloth are the finished sizes after galvanizing. Accuracy of the wire size in standard hardware cloth shall be determined by computing separately the average measured diameter of not less than ten (10) warp wires and of the same number of filler wires, taken at random from the finished, galvanized-after-woven, hardware cloth in any single standard roll.

### SELVAGES

11. All standard widths of hardware cloth shall have two selvage edges.



## TOLERANCES

12. Permissible variations in the measurements of standard hardware cloth shall be:

- (a) Wire diameter, after galvanizing: minus 0.0015 inch for  $2 \times 2$  and  $3 \times 3$  mesh; minus 0.001 inch for  $4 \times 4$  and  $8 \times 8$  mesh.<sup>1</sup>
- (b) Mesh count:
  - Warp,  $\frac{1}{4}$  mesh per linear foot plus or minus.
  - Filler,  $\frac{1}{2}$  mesh per linear foot plus or minus.
- (c) Width:  $\frac{1}{4}$  inch, plus or minus.
- (d) Roll length: minus 4 inches.<sup>1</sup>
- (e) Weight: 10 percent plus or minus.

## LABELING

13. The mesh, wire size, width, and length of standard hardware cloth in each individual roll shall be clearly shown by means of a tag or printed label attached to the roll in a conspicuous place.

## GUARANTEE

14. In order to assure the purchaser that he is receiving hardware cloth which complies with the requirements of this standard, it is recommended that the tag or label on each roll carry the following guarantee:

We hereby guarantee that this Hardware Cloth complies with all requirements of Commercial Standard CS132-46, as issued by the National Bureau of Standards of the United States Department of Commerce.

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(Signed)

## EFFECTIVE DATE

15. The standard is effective for new production from April 15, 1946.

## STANDING COMMITTEE

16. The following individuals comprise the membership of the standing committee, as appointed by the National Bureau of Standards. This committee is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Each organization nominated its own representative. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Division of Trade Standards, National Bureau of Standards, which acts as secretary for the committee.

GEORGE F. WRIGHT (chairman), G. F. Wright Steel & Wire Co., 243 Stafford Street, Worcester, Mass.

JOHN D. STODDER, Cyclone Fence Division, American Steel & Wire Co., Waukegan, Ill.

L. B. JACKSON, Wickwire Brothers, Inc., 189 Main Street, Cortland, N. Y.

<sup>1</sup> No limitation specified for oversize wire diameter and overlength roll.

RALPH W. BACON, Hardware Cloth and Poultry Netting Institute, 74 Trinity Place, New York 6, N. Y.  
THOMAS A. FERNLEY, Jr., The National Wholesale Hardware Association, 505 Arch Street, Philadelphia 6, Pa.  
IRVING BAILEY, American Retail Federation, 1627 K Street, Washington, D. C.  
L. V. JUDSON, National Bureau of Standards, Washington 25, D. C.  
T. W. McALLISTER, Southern Hardware Jobbers Association, 814 Metcalf Building, Orlando, Fla.  
RIVERS PETERSON, National Retail Hardware Association, 333 North Pennsylvania Street, Indianapolis 4, Ind.

### HISTORY OF PROJECT

17. On September 26, 1944, the Hardware Cloth and Poultry Netting Institute requested the cooperation of the National Bureau of Standards in the establishment of a commercial standard for hardware cloth. A preliminary draft of the proposed commercial standard was submitted to manufacturers for their review and comment. All comment was carefully considered at a meeting held in New York City on June 27, 1945. An adjusted draft was then prepared and submitted on August 21, 1945, to technical organizations, Government agencies, testing laboratories, manufacturers, and wholesale, retail, and user organizations for further review and comment. The standard was then modified in accordance with composite recommendations of those concerned and circulated on January 23, 1946, to the trade for written acceptance.

18. Upon receipt of official acceptances estimated to represent a satisfactory majority of the production by volume and in the absence of active valid opposition, the standard was promulgated on March 15, 1946, as Commercial Standard CS132-46.

## ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date\_\_\_\_\_

Division of Trade Standards,  
National Bureau of Standards,  
Washington 25, D. C.

Gentlemen:

We believe that the Commercial Standard CS132-46 constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

Production <sup>1</sup>      Distribution <sup>1</sup>      Purchase <sup>1</sup>      Testing <sup>1</sup>

of hardware cloth.

We reserve the right to depart from it as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer\_\_\_\_\_

(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer\_\_\_\_\_

Organization\_\_\_\_\_

(Fill in exactly as it should be listed)

Street address\_\_\_\_\_

City, zone, and State\_\_\_\_\_

<sup>1</sup> Underscore which one. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

## TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions; but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish for specific commodities, nationally recognized grades or consumer criteria and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signatures indicates an intention to follow the commercial standard where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.



## ACCEPTORS

19. The organizations listed below have individually accepted these specifications for use as far as practicable in the production, distribution, testing or purchase of hardware cloth. In accepting the standard they reserved the right to depart therefrom as they individually deem advisable. It is expected that articles which actually comply with the requirements of this standard in all respects will be regularly identified or labeled as conforming thereto, and that purchasers will require such specific evidence of conformity.

### ASSOCIATIONS

#### (GENERAL SUPPORT)

American Hot Dip Galvanizers Association, Pittsburgh, Pa.  
 Boy Scouts of America, New York, N. Y.  
 Hardware Cloth & Poultry Netting Institute, New York, N. Y.  
 National Pest Control Association, Inc., Brooklyn, N. Y.  
 National Progressive Color Phase Association, Madison, Wis.  
 Wisconsin Mink Breeders Association, Burlington, Wis.  
 Z. C. M. I., Wholesale Hardware Division, Salt Lake City, Utah.

### FIRMS

Abraham & Straus, Inc., Brooklyn, N. Y.  
 Academy Hardware & Supply Co., Inc., New York, N. Y.  
 Ace Hardware Corporation, Chicago, Ill.  
 Agnew Hardware Co., Everett, Wash.  
 Alabama, State of, Montgomery, Ala.  
 Albany Hardware & Iron Co., Albany, N. Y.  
 Allen Co., Inc., Walter H., Dallas, Tex.  
 Allen & Jemison Co., Tuscaloosa, Ala.  
 Allison-Erwin Co., Charlotte, N. C.  
 Amarillo Hardware Co., Amarillo, Tex.  
 American Wholesale Hardware Co., Long Beach, Calif.  
 Anderson & Ireland Co., The, Baltimore, Md.  
 Anniston Hardware Co., Anniston, Ala.  
 Arizona Hardware Co., Phoenix, Ariz.  
 Austin Bros., Stockton, Calif.  
 Aves, Inc., Arthur A., Yakima, Wash.  
 Badger Paint & Hardware Stores, Inc., Milwaukee, Wis.  
 Baird Hardware Co., Gainesville, Fla.  
 Baker & Hamilton, San Francisco, Calif.  
 Baltimore, City of, Bureau of Plans & Surveys, Baltimore, Md.  
 Bard Hardware Co., Reading, Pa.  
 Barker, Rose & Kimball, Inc., Elmira, N. Y.  
 Barnes Lumber Co., W. F. & J. F., Waco, Tex.  
 Barr Lumber Co., Santa Ana, Calif.  
 Barrett Hardware Co., Joliet, Ill.  
 Bay Cities Wholesale Hardware Co., San Francisco, Calif.  
 Bayonne Steel Products Co., Paterson, N. J.  
 Beck & Gregg Hardware Co., Atlanta, Ga.  
 Benson Lumber Co., Pawhuska, Okla.  
 Bering-Cortes Hardware Co., Houston, Tex.  
 Bigelow & Dowse Co., Boston, Mass.  
 Biggs-Kurtz Hardware Co., The, Grand Junction, Colo.  
 Billings Hardware Co., Billings, Mont.  
 Birmingham, City of, Birmingham, Ala.  
 Black Hardware Co., Galveston, Tex.  
 Blish, Mize & Silliman Hardware Co., Atchison, Kans.  
 Bloch Hardware Co., New York, N. Y.  
 Bluefield Hardware Co., Bluefield, W. Va.  
 Bluefield Supply Co., Bluefield, W. Va.

Blumberg Co., Inc., Wm. L., New York, N. Y.  
 Booky Hardware Corporation, New York, N. Y.  
 Bosman & Casson, Inc., Harrison, N. J.  
 Bostwick-Braun Co., The, Toledo, Ohio.  
 Brown-Camp Hardware Co., Des Moines, Iowa.  
 Brown Lynch Scott Co., Inc., Monmouth, Ill.  
 Buck & Sons, Peter E., Ashland, Pa.  
 Budge Co., Frank T., Miami, Fla.  
 Buell Lumber & Manufacturing Co., Dallas, Tex.  
 Buffalo, City of, Division of Buildings, Department of Public Works, Buffalo, N. Y.  
 Buhl Sons Co., Detroit, Mich.  
 Buhrman-Pharr Hardware Co., Texarkana, Ark.  
 Builders Supply Co., San Antonio, Tex.  
 Building Service, Inc., Great Falls, Mont.  
 Burbans & Black, Inc., Syracuse, N. Y.  
 Butler Brothers, Chicago, Ill.  
 Cameron & Co., Inc., Wm., Waco, Tex.  
 Cameron Lumber Co., Inc., Newburgh, N. Y.  
 Canton Hardware Co., The, Canton, Ohio.  
 Canton Lumber Co., Inc., The, Canton, Kans.  
 Carlisle Hardware Co., Springfield, Mass.  
 Carpenter Hardware Co., The, Athens, Ohio.  
 Ceco Steel Products Corporation, Peoria, Ill.  
 Centre Hardware Co., Roslindale, Mass.  
 Charleston Hardware Co., Charleston, W. Va.  
 Clark Witbeck Co., Schenectady, N. Y.  
 Cloverdale Hardware & Lumber Co., Cloverdale, Ind.  
 Cole Manufacturing Co., Memphis, Tenn.  
 Colladay Hardware Co., The, Frank, Hutchinson, Kans.  
 Collins & Son, Inc., J. S., Moorestown, N. J.  
 Combs Lumber Co., Lexington, Ky.  
 Conde Hardware Co., W. W., Watertown, N. Y.  
 Connecticut Hardware Supply Co., Inc., Branford, Conn.  
 Coop. G. L. F. Farm Supplies, Inc., Ithaca, N. Y.  
 Corpus Christy Hardware Co., Corpus Christi, Tex.  
 Cosgrove Wire Cloth Co., Inc., Belleville, N. J. (General support.)  
 Curtis Co.'s, Inc., Wausau Division, Wausau, Wis.  
 Cyclone Fence Division (American Steel & Wire Co.), Waukegan, Ill.  
 Darol Co., Inc., Dayton, Ohio.  
 Delaware Hardware Co., Wilmington, Del.  
 Delta Hardware Co., Escanaba, Mich.  
 Devitt, Paul J., Philadelphia, Pa.  
 Diamond Lumber & Hardware Co., Lovell, Wyo.  
 Dinkins-Davidson Hardware Co., Atlanta, Ga.  
 Duer & Sons, Inc., John, Baltimore, Md.  
 Dunlap & Co., Inc., Columbus, Ind.  
 DuQuoin Home Lumber Co., DuQuoin, Ill.  
 Dutton-Lainson Co., Hastings, Neb.  
 Duval Hardware Co., Anaconda, Mont.  
 Edwards & Walker Co., Portland, Maine.  
 Emery Hardware Co., Bradford, Pa.  
 Emery-Waterhouse Co., The, Portland, Maine.  
 Emmons Hawkins Hardware Co., Huntington, W. Va.  
 Epstein Co., N. B., Scranton, Pa.  
 Erb Hardware Co., Ltd., Lewiston, Idaho.  
 Farley & Loetscher Manufacturing Co., Dubuque, Iowa.  
 Farwell Ozmun Kirk & Co., St. Paul, Minn.

- Federal Hardware Co., Inc., New York, N. Y.  
 Fischer Lime & Cement Co., Memphis, Tenn.  
 Fitchburg Hardware Co., Fitchburg, Mass.  
 Fones Bros. Hardware Co., Little Rock, Ark.  
 Foronoff Hardware Co., Washington, D. C.  
 Forcum-James Lumber Co., Dyersburg, Tenn.  
 Franke & Co., Inc., C. D., Charleston, S. C.  
 Frankfurth Hardware Co., Milwaukee, Wis.  
 Franklin Hardware Co., New York, N. Y.  
 Franklin Hardware & Supply Co., Philadelphia, Pa.  
 Fries, Beall & Sharp Co., Washington, D. C.  
 Fuller & Co., W. P., Portland, Oreg.  
 Gable's, Inc., Harrisburg, Pa.  
 Galbraith Steel & Supply Co., Dallas, Tex.  
 Gannaway & Co., Inc., John E., Lynchburg, Va.  
 Garden County Lumber Co., Oshkosh, Nebr.  
 Garfield Screen Co., Inc., Jersey City, N. J.  
 Gates Hardware & Supply Co., Tulsa, Okla.  
 Gelfond Screen & Weatherstrip Co., Newark, N. J.  
 General Hardware & Supply Co., Inc., Phillipsburg, Pa.  
 General Millwork Corporation, Utica, N. Y.  
 Gilbert & Bennett Manufacturing Co., The, Georgetown, Conn.  
 Goldberg Brothers, Denver, Colo.  
 Goldenblum & Co., William, New York, N. Y.  
 Graves-Humphreys Hardware Co., Roanoke, Va.  
 Hall Hardware Co., Minneapolis, Minn.  
 Harbor Sales Co., Inc., The, Baltimore, Md.  
 Harco Hardware Co., Cleveland, Ohio.  
 Harper & McIntire Co., Cedar Rapids, Iowa.  
 Harper & Reynolds Corporation, Los Angeles, Calif.  
 Harris Hardware Co., Washington, N. C.  
 Hartford Wire Works Co., The, Hartford, Conn.  
 Hartung Co., F. L., Seattle, Wash.  
 Hasson-Bryan Hardware Co., Morristown, Tenn.  
 Hauser Lumber Co., Fairfax, Minn., Gibbon, Minn., and Sleepy Eye, Minn.  
 Hayden Wire Works, Inc., The, West Springfield, Mass.  
 Hayes Sammons Hardware Co., Mission, Tex.  
 Heilig Brothers Co., York, Pa.  
 Heitmann Co., F. W., Houston, Tex.  
 Helena Hardware Co., Helena, Mont.  
 Hendrie & Bolthoff Manufacturing & Supply Co., Denver, Colo.  
 Henkle & Joyce Hardware Co., Lincoln, Nebr.  
 Herbert Hearn Hardware Co., Cambridge, Md.  
 Herr & Co., Inc., Lancaster, Pa.  
 Herzog Supply Co., Kingston, N. Y.  
 Hibbard, Spencer, Bartlett & Co., Chicago, Ill.  
 Higginbotham Bros. & Co., Comanche, Tex.  
 Higginbotham-Pearlstone Hardware Co., Dallas, Tex.  
 Hill-Behan Lumber Co., St. Louis, Mo.  
 Hillerud Hardware, Sauk Centre, Minn.  
 Hodges Brothers, Olathe, Kans.  
 Holmes Hardware Co., Pueblo, Colo.  
 Holter Hardware Co., A. M., Helena, Mont.  
 Home Lumber & Coal Co., Boise, Idaho.  
 Hopkins & Co., New York, N. Y.  
 Hubbard Co., The S. B., Jacksonville, Fla.  
 Huey & Philp Hardware Co., Dallas, Tex.  
 Hunt & Mottet Co., Tacoma, Wash.  
 Huske Hardware House, Inc., Fayetteville, N. C.  
 Ideal Screen & Manufacturing Co., Los Angeles, Calif.  
 Igoe Brothers, Inc., Newark, N. J.  
 Ilied Co., Charles, Las Vegas, N. Mex.  
 Imperial Hardware Co., El Centro, Calif.  
 Industrial Wire Cloth Co., New York, N. Y.  
 Interstate Sash & Door Co., The, Canton, Ohio.  
 Jackson Hardware Co., The, Aberdeen, S. Dak.  
 Jacobs & Hutchinson Hardware Co., Fairmont, W. Va.  
 Janney Sample Hill & Co., Minneapolis, Minn.  
 Jellico Hardware Co., Jellico, Tenn.  
 Jelliff Manufacturing Corporation, The, C. O., Southport, Conn.  
 Jennison Hardware Co., The, Bay City, Mich.  
 Jensen-Byrd Co., Spokane, Wash.  
 Johnson & Co., Langdale, Ala.  
 Johnson Metal Products Co., Erie, Pa.  
 Kamin Co., The A., Chicago, Ill.  
 Kaminski Hardware Co., Georgetown, S. C.  
 Kane Manufacturing Corporation, Kane, Pa.  
 Keith, Simmons Co., Inc., Nashville, Tenn.  
 Kelley How Thomson Co., Duluth, Minn.  
 Kemp Lumber Co., Roswell, N. Mex.  
 Kendall Hardware-Mill Supply Co., Battle Creek, Mich.  
 Kentucky Metal Products Co., Louisville, Ky.  
 King Hardware Co., Atlanta, Ga.  
 King Lumber Co., The, Bakersfield, Calif.  
 Kleinhardt Hardware Co., New York, N. Y.  
 Knapp & Spencer Co., Sioux City, Iowa.  
 Knight & Wall Co., Tampa, Fla.  
 Korber & Co., J., Albuquerque, N. Mex.  
 Krebs & Co., Arthur H., Springfield, Ill.  
 Kretschmer-Tredway Co., Dubuque, Iowa.  
 Kruse Hardware Co., The, Cincinnati, Ohio.  
 Kwikleiks Sons, L., Bainbridge, Ga.  
 Lake Erie Hardware Co., The, Cleveland, Ohio.  
 Lake Lumber Co., The, Hebron, Ohio.  
 Larson Hardware Co., Sioux Falls, S. Dak.  
 Lato Products Co., Texarkana, Tex.  
 Lawrence Lumber Co., Inc., The, Wichita, Kans.  
 Lee Hardware Co., The, Salina, Kans.  
 Lee Hardware Co., Ltd., The, Shreveport, La.  
 Levy Bros., Burlingame, Calif.  
 LiLien Hardware & Supply Corporation, Long Island City, N. Y.  
 Lingo Leeper Co., The, Denison, Tex.  
 Linkway Stores Co., Little Rock, Ark.  
 Lipscomb & Co., H. G., Nashville, Tenn.  
 Loeb Hardware Co., Montgomery, Ala.  
 Logan Gregg Hardware Co., Pittsburgh, Pa.  
 Logan Hardware & Supply Co., Logan, W. Va.  
 Longacre Hardware & Electric Co., Inc., New York, N. Y.  
 Loucks Hardware Co., The, Scottdale, Pa.  
 Lowe Co., Geo. A., Ogden, Utah.  
 Luthe Hardware Co., Des Moines, Iowa.  
 Lyon-Gray Lumber Co., Dallas, Tex.  
 Madison Hardware Co., Madison, Wis.  
 Marion Hardware & Supply Co., Inc., Marion, Va.  
 Marshall Co., Inc. A. H., Plattsburg, N. Y.  
 Marshall-Wells Co., Duluth, Minn., Portland, Oreg., and Spokane, Wash.  
 Martin Hardsoc Co., The, Pittsburgh, Pa.  
 Martin Lumber Co., Springfield, Mass.  
 Masback, Inc. (Formerly Masback Hardware Co., Inc.), New York, N. Y.  
 Mathews-Boucher, Rochester, N. Y.  
 Maxwell Wholesale Hardware Co., Oakland, Calif.  
 May Hardware Co., Washington, D. C.  
 McClung & Co., Inc., C. M., Knoxville, Tenn.  
 McGowin-Lyons Hardware & Supply Co., Mobile, Ala.  
 McGregor Hardware Co., Springfield, Mo.  
 McKee, R. D., Hagerstown, Md.  
 McPhillips Manufacturing Co., Mobile, Ala.  
 Melton Hardware Co., The, Meridian, Miss.  
 Mesker Bros. Iron Co., St. Louis, Mo.  
 Meyers Manufacturing Co., Fred L., Hamilton, Ohio.  
 Michigan State Purchasing Division, Lansing, Mich.  
 Midstate Hardware Co., Bend, Oreg.  
 Miller Bros. Hardware Co., Richmond, Ind.  
 Miller's Wholesale Hardware, Cortland, N. Y.  
 Mitchell Powers Hardware Co., Bristol, Va.  
 Momsen-Dunnegan-Ryan Co., El Paso, Tex.  
 Montana Hardware Co., Butte, Mont.  
 Montana Lumber & Hardware Co., Lewistown, Mont.  
 Montgomery & Crawford, Inc., Spartanburg, S. C.  
 Morehouse & Wells Co., Decatur, Ill.  
 Morley Brothers, Saginaw, Mich.  
 Morley-Murphy Co., Green Bay, Wis.  
 Morris Hardware & Paint Co., New York, N. Y.  
 Morrow-Thomas Hardware Co., Amarillo, Tex.  
 Morse Hardware Co., Bellingham, Wash.  
 Muntz & Lea Co., Elgin, Ill.  
 Myers & Co., Inc., M. P., Plattsburg, N. Y.  
 Nagell Stores, Inc., Minneapolis, Minn.  
 National Screen Co., Inc., Suffolk, Va.  
 Neil Co., Thos. G., Paterson, N. J. (General support.)  
 Netcher's Boston Store, Chicago, Ill.  
 New Hampshire Hardware & Plumbing Supply Co., Manchester, N. H.  
 Newark Wire Cloth Co., Newark, N. J.  
 Newberry's Hardware Co., Alliance, Nebr.



- Norquist Products, Inc., Jamestown, N. Y.  
 Northern Commercial Co., Seattle, Wash.  
 Northwestern Steel & Wire Co., Sterling, Ill.  
 Norton Hardware Co., Norton, Va.  
 Nusbaum Wholesale Hardware Co., San Francisco, Calif.  
 Odell Valley Hardware Co., Greensboro, N. C.  
 Ohio Valley Hardware & Roofing Co., Evansville, Ind.  
 Oklahoma City Hardware Co., Oklahoma City, Okla.  
 O'Neill-McNamara Hardware Co., Vicksburg, Miss.  
 Orange Screen Co., Maplewood, N. J.  
 Ornamental Iron Works Co., The, Akron, Ohio.  
 Pacific Manufacturing Co., Santa Clara, Calif.  
 Pacific Wire Works Co., Seattle, Wash.  
 Page, Steel & Flagg Co., The, New Haven, Conn.  
 Patten-Blinn Lumber Co., Los Angeles, Calif.  
 Paxton & Gallagher Co., Omaha, Neb.  
 Pearlstine Hardware Co., St. Matthews, S. C.  
 Pearlstine & Sons, I. M., Charleston, S. C.  
 Peaslee-Gaulbert Corporation, Louisville, Ky.  
 Peden Iron & Steel Co., Houston, Tex.  
 Peeler Hardware Co., Macon, Ga.  
 Pelson Hardware Co., Pittsfield, Mass.  
 Pensacola Hardware Co., Pensacola, Fla.  
 Peterson Lumber & Paint Co., El Paso, Tex.  
 Pettie & Co., W. J., Oklahoma City, Okla.  
 Phenix Manufacturing Co., Inc., Milwaukee, Wis.  
 Phillips & Co., I. W., Tampa, Fla.  
 Phoenix Wire Works, Inc., Detroit, Mich.  
 Pierce Hardware Co., Inc., The, Taunton, Mass.  
 Pittsfield Hardware & Plumbing, Pittsfield, Mass.  
 Pomeroy's, Inc., Reading, Pa.  
 Porter Hardware Co., E. R., Dothan, Ala.  
 Prutzlaff Hardware Co., John, Milwaukee, Wis.  
 Prutzman Co., Inc., The H. C., Altoona, Pa.  
 Purkey & Son, J. W., Berea, Ky.  
 Queensborough Lumber Co., Inc., Bayside, N. Y.  
 Quigley Co., J. R., Gloucester City, N. J.  
 Raton Builders Supply, Raton, N. Mex.  
 Read Co., Inc., V. G., Collingswood, N. J.  
 Reams Hardware Co., Middlesboro, Ky.  
 Rehm Hardware Co., Chicago, Ill.  
 Reilly Bros. & Raub, Lancaster, Pa.  
 Rentuart Lumber Yards, Inc., Coral Gables, Fla.  
 Reynolds Wire Co., Dixon, Ill.  
 Rice & Miller Co., Bangor, Maine.  
 Richmond Hardware Co., Richmond, Va.  
 Roanoke Hardware Co., Roanoke, Va.  
 Roark & Co., L. W., Brookneal, Va.  
 Roberts, Sanford & Taylor Co., Sherman, Tex.  
 Robinson Lumber Co., Fred J., Detroit, Mich.  
 Roebling's Sons Co., John A., Trenton, N. J.  
 Rohrbach Hardware & Supply Co., Inc., Scranton, Pa.  
 Rome Hardware Co., Inc., Rome, Ga.  
 Roseboro Hardware Co., Roseboro, N. C.  
 Rosenfeld Bros. Hardware & Plumbing Supplies, Inc., New York, N. Y.  
 Rounds & Porter Co., Wichita, Kans.  
 Royal Oak Wholesale Co., Royal Oak, Mich.  
 Rust Sash & Door Co., Kansas City, Mo.  
 S. & D. Hardware Co., New York, N. Y.  
 Saginaw Hardware Co., Saginaw, Mich.  
 St. Louis, City of, Board of Education, St. Louis, Mo.  
 Salt Lake Hardware Co., The, Salt Lake City, Utah.  
 San Jose Hardware Co., San Jose, Calif.  
 Schafer Co., The, Decatur, Ind.  
 Schindel, Rohrer & Co., Inc., Hagerstown, Md.  
 Schlafer Supply Co., Appleton, Wis.  
 Schlatter Hardware Co., Inc., Fort Wayne, Ind.  
 Schoenberg Manufacturing Co., F. E., St. Louis, Mo.  
 Schwabacher Hardware Co., Seattle, Wash.  
 Sears, Roebuck & Co., Chicago, Ill.  
 Seattle Hardware Co., Seattle, Wash.  
 Sechtman Hardware Co., Inc., Hartford, Conn.  
 Segelke & Kohlhaus Co., La Crosse, Wis.  
 Semer Hardware Co., Inc., New York, N. Y.  
 Semmes Hardware Co., Savannah, Ga.  
 Service Screen Co., Dallas, Tex.  
 Shapleigh Hardware Co., St. Louis, Mo.  
 Sharp-Horsey Hardware Co., Atlanta, Ga.  
 Sheffield Co., Americus, Ga.  
 Shields & Brother, Philadelphia, Pa.  
 Shillito Co., The John, Cincinnati, Ohio.  
 Siler City Hardware Co., Siler City, N. C.  
 Silvey Lumber Co., J. A., Inavale, Nebr.  
 Sloss & Brittain, San Francisco, Calif.  
 Small Co., Inc., P. A. & S., York, Pa.  
 Smith Bros. Hardware Co., The, Columbus, Ohio.  
 Smith Co., Timothy, Boston, Mass.  
 Smith Wire & Iron Works, F. P., Chicago, Ill.  
 Snedaker & Co., Inc., Frank C., Philadelphia, Pa.  
 Somers Brothers, Springfield, Ohio.  
 Soo Hardware Co., The, Sault Ste. Marie, Mich.  
 Sothman Co., The, Grand Island, Nebr.  
 Southern Hardware Co., Charleston, W. Va.  
 Southern Hardware Co., Ltd., The, Monroe, La.  
 Southwest Hardware Co., Los Angeles, Calif.  
 Speer Hardware Co., Fort Smith, Ark.  
 Spicola Hardware Co., Inc., Tampa, Fla.  
 Standard Lumber Co., Winona, Minn.  
 Standard Supply & Hardware Co., Inc., New Orleans, La.  
 Stangel Hardware Co., J. J., Manitowoc, Wis.  
 Stauffer, Eshleman & Co., Ltd., New Orleans, La.  
 Steinman Hardware Co., Lancaster, Pa.  
 Sterling Hardware Co., Inc., Hazard, Ky.  
 Stichter Hardware Co., Inc., Reading, Pa.  
 Stowe Hardware & Supply Co., Kansas City, Mo.  
 Strange-Jones Hardware Co., Clinton, Okla.  
 Stratton-Warren Hardware Co., Memphis, Tenn.  
 Strevell Paterson Hardware Co., Salt Lake City, Utah.  
 Summers Hardware & Supply Co., Johnson City, Tenn.  
 Superior-Sterling Co., Bluefield, W. Va.  
 Superior Wire & Iron Products, Chicago, Ill.  
 Supplee Biddle Co., Philadelphia, Pa.  
 Swank Hardware Co., The, Johnstown, Pa.  
 Tausche Hardware Co., V., La Crosse, Wis.  
 Tenk Hardware Co., Quincy, Ill.  
 Thomas & Sons, Inc., Boonsboro, Md.  
 Thompson & Co., H. D., Malone, N. Y.  
 Thompson Hardware Co., The, Lowell, Mass.  
 Thompson Hardware Co., W. A. L., Topeka, Kans.  
 Thompson Miller Hardware Corporation, Charleston, S. C.  
 Thompson-Parker Lumber Co., Ponca City, Okla.  
 Thompson Yards, Inc., Aberdeen, S. Dak.  
 Thomson-Diggs Co., The, Sacramento, Calif.  
 Throop-Martin Co., The, Columbus, Ohio.  
 Townner Hardware Co., Muskegon, Mich.  
 Tryon Co., Edw. K., Philadelphia, Pa.  
 Tyler Co., The W. S., Cleveland, Ohio.  
 Underhill, Clinch & Co., New York, N. Y.  
 Underwood Coal & Supply Co., Mobile, Ala.  
 United Hardware & Supply Co., Titusville, Pa.  
 United Lumber Co., St. Louis, Mo. (General sub-port.)  
 Van Camp Hardware & Iron Co., Indianapolis, Ind.  
 Vance Co., Inc., The, Chilhowie, Va.  
 Varick Co., John B., Manchester, N. H.  
 Vaughan & Sons, Geo. C., Houston, Tex.  
 Vermont Hardware Co., Inc., Burlington, Vt.  
 Virginia, Commonwealth of, Division of Purchase & Printing, Richmond, Va.  
 Wade Hardware Co., Greenwood, Miss.  
 Wagner Hardware Co., The, Mansfield, Ohio.  
 Wainwright Co., A. B., Philadelphia, Pa.  
 Walker Hardware Co., Isaac, Peoria, Ill.  
 Warren Lumber Co., The, Fort Morgan, Colo.  
 Watkins-Cottrell Co., Richmond, Va.  
 Wayne Hardware Co., Inc., Ft. Wayne, Ind.  
 Weakley-Watson-Miller Hardware Co., Brownwood, Tex.  
 Weaver Wire Products Co., Miami, Fla.  
 Weber Hardware Co., Mantua, Ohio.  
 Weber Hardware & Supply Co., Chagrin Falls, Ohio.  
 Weed & Co., Buffalo, N. Y.  
 Western Hardware Corporation, Muskogee, Okla.  
 Western Metal Supply Co., San Diego, Calif.  
 Western Reserve Lumber Co., The, Warren, Ohio.  
 Whissel Lumber Co., Inc., L. N., Buffalo, N. Y.  
 Whitehall Hardware Co., New York, N. Y.  
 Whitney & Co., San Diego, Calif.  
 Whittier Lumber & Millwork Co., Newark, N. J.  
 Wholesale Hardware Co., Inc., New York, N. Y.  
 Wiant & Barr Hardware Co., Parkersburg, W. Va.  
 Wickwire Brothers, Inc., Cortland, N. Y.

Wickwire Spencer Steel Division, The Colorado Fuel  
& Iron Corporation, New York, N. Y.  
Wilcox & Haslup, Baltimore, Md.  
Williams Co., J. A., Pittsburgh, Pa.  
Williams & Hunting Co., Cedar Rapids, Iowa.  
Williams & Son, Geo. A., New York, N. Y.  
Williamson & Co., Inc., Ben, Ashland, Ky.  
Wilson & Pugh Co., Cumberland, Md.  
Wimberly & Thomas Hardware Co., Inc., Birming-  
ham, Ala.  
Winer's Hardware Stores, Inc., Quincy, Mass.  
Wolf & Dessauer Co., Fort Wayne, Ind.  
Woodring & Co., Jere, Hazleton, Pa.  
Woodruff Hardware Co., W. W., Knoxville, Tenn.  
Woodwell Co., Joseph, Pittsburgh, Pa.  
Worth, Hulfish & Sons, Inc., Alexandria, Va.  
Worthington Co., Geo., Cleveland, Ohio.  
Wright Steel & Wire Co., G. F., Worcester, Mass.

Wright & Wilhelmy Co., Omaha, Nebr.  
Wyatt & Sons Co., Job P., Raleigh, N. C.  
Wyeth Co., St. Joseph, Mo.  
Zaentz & Sons, S., Passaic, N. J.  
Zero Weather Stripping Co., Inc., New York, N. Y.  
Zork Hardware Co., El Paso, Tex.

#### U. S. GOVERNMENT

Agriculture, U. S. Department of, Washington,  
D. C.  
Federal Works Agency, Public Buildings Adminis-  
tration, Washington, D. C. (General support.)  
Justice, U. S. Department of, Bureau of Prisons,  
Construction Division, Washington, D. C.  
National Housing Agency, Washington, D. C.  
(General support.) War Department, Washing-  
ton, D. C.



## COMMERCIAL STANDARDS

CS No.	Item	CS No.	Item
0-40.	Commercial standards and their value to business (third edition).	48-40.	Domestic burners for Pennsylvania anthracite (underfeed type) (second edition).
1-42.	Clinical thermometers (third edition).	49-34.	Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
2-30.	Mopsticks.	50-34.	Binders board for bookbinding and other purposes.
3-40.	Stoddard solvent (third edition).	51-35.	Marking articles made of silver in combination with gold.
4-29.	Staple porcelain (all-clay) plumbing fixtures.	52-35.	Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
5-46.	Pipe nipples; brass, copper, steel and wrought-iron (second edition).	53-35.	Colors and finishes for cast stone.
6-31.	Wrought-iron pipe nipples (second edition). Superseded by CS5-46.	54-35.	Mattresses for hospitals.
7-29.	Standard weight malleable iron or steel screwed unions.	55-35.	Mattresses for institutions.
8-41.	Gage blanks (third edition).	56-41.	Oak flooring (second edition).
9-33.	Builders' template hardware (second edition).	57-40.	Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition).
10-29.	Brass pipe nipples. Superseded by CS5-46.	58-36.	Woven elastic fabrics for use in overalls (overall elastic webbing).
11-41.	Moisture regains of cotton yarns (second edition).	59-44.	Textiles—testing and reporting (fourth edition).
12-40.	Fuel oils (fifth edition).	60-36.	Hardwood dimension lumber.
13-44.	Dress patterns (fourth edition).	61-37.	Wood-slat venetian blinds.
14-43.	Boys' button-on waists, shirts, junior and sport shirts (made from woven fabrics) (third edition).	62-38.	Colors for kitchen accessories.
(E) 15-43.1	Men's pajamas (made from woven fabrics) (second edition).	63-38.	Colors for bathroom accessories.
16-29.	Wall paper.	64-37.	Walnut veneers.
17-42.	Diamond core drill fittings (third edition).	65-43.	Methods of analysis and of reporting fiber composition of textile products (second edition).
19-29.	Hickory golf shafts.	66-38.	Marking of articles made wholly or in part of platinum.
19-32.	Foundry patterns of wood (second edition).	67-38.	Marking articles made of karat gold.
20-42.	Staple vitreous china plumbing fixtures (third edition).	68-38.	Liquid hypochlorite disinfectant, deodorant, and germicide.
21-39.	Interchangeable ground-glass joints, stopcocks, and stoppers (fourth edition).	69-38.	Pine oil disinfectant.
22-40.	Builders' hardware (nontemplate) (second edition).	70-41.	Phenolic disinfectant (emulsifying type) (second edition) (published with CS71-41).
23-30.	Feldspar.	71-41.	Phenolic disinfectant (soluble type) (second edition) (published with CS70-41).
24-43.	Screw threads and tap-drill sizes.	72-38.	Household insecticide (liquid spray type).
25-30.	Special screw threads. Superseded by CS24-43.	73-45.	Old growth Douglas fir standard stock doors (third edition).
26-30.	Aromatic red cedar closet lining.	74-39.	Solid hardwood wall paneling.
27-36.	Mirrors (second edition).	75-42.	Automatic mechanical draft oil burners designed for domestic installations (second edition).
28-46.	Cotton fabric tents, tarpaulins and covers (second edition).	76-39.	Hardwood interior trim and molding.
29-31.	Staple seats for water-closet bowls.	77-40.	Sanitary cast-iron enameled ware.
30-31.	Colors for sanitary ware.	78-40.	Ground-and-polished lenses for sun glasses (second edition) (published with CS79-40).
31-38.	Wood shingles (fourth edition).	79-40.	Blown, drawn, and dropped lenses for sun glasses (second edition) (published with CS78-40).
32-31.	Cotton cloth for rubber and pyroxylin coating.	80-41.	Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).
33-43.	Knit underwear (exclusive of rayon) (second edition).	81-41.	Adverse-weather lamps for vehicles (after market).
34-31.	Bag, case, and strap leather.	82-41.	Inner-controlled spotlamps for vehicles (after market).
35-42.	Plywood (hardwood and eastern red cedar) (second edition).	83-41.	Clearance, marker, and identification lamps for vehicles (after market).
36-33.	Fourdrinier wire cloth (second edition).		
37-31.	Steel bone plates and screws.		
38-32.	Hospital rubber sheeting.		
39-37.	Wool and part wool blankets (second edition). (Withdrawn as commercial standard, July 14, 1941.)		
40-32.	Surgeons' rubber gloves.		
41-32.	Surgeons' latex gloves.		
42-43.	Structural fiber insulating board (third edition).		
43-32.	Grading of sulphonated oils.		
44-32.	Apple wraps.		
45-45.	Douglas fir plywood (sixth edition).		
46-40.	Hosiery lengths and sizes (third edition).		
47-34.	Marking of gold-filled and rolled-gold-plate articles other than watchcases <sup>1</sup>		

<sup>1</sup> Where (E) precedes the CS number, it indicates an emergency commercial standard, drafted under war conditions with a view toward early revision.

CS No.	Item	CS No.	Item
84-41.	Electric tail lamps for vehicles (after market).	108-43.	Treading automobile and truck tires.
85-41.	Electric license-plate lamps for vehicles (after market).	109-44.	Solid-fuel-burning forced-air furnaces.
86-41.	Electric stop lamps for vehicles (after market).	110-43.	Tire repairs—vulcanized (passenger, truck, and bus tires).
87-41.	Red electric warning lanterns.	111-43.	Earthenware (vitreous-glazed) plumbing fixtures.
88-41.	Liquid-burning flares.	112-43.	Homogeneous fiber wallboard.
89-40.	Hardwood stair treads and risers.	113-44.	Oil-burning floor furnaces equipped with vaporizing pot-type burners.
90- .	(Reserved for power shovels and cranes).	114-43.	Hospital sheeting for mattress protection.
91-41.	Factory-fitted Douglas fir entrance doors.	115-44.	Porcelain-enameled tanks for domestic use.
92-41.	Cedar, cypress and redwood tank stock lumber.	116-44.	Bituminized-fibre drain and sewer pipe.
93-41.	Portable electric drills (exclusive of high frequency).	117-44.	Mineral wool; blankets, blocks, insulating cement, and pipe insulation for heated industrial equipment.
94-41.	Calking lead.	118-44.	Marking of jewelry and novelties of silver.
95-41.	Lead pipe.	(E)119-45.	Dial indicators (for linear measurements).
96-41.	Lead traps and bends.	120-44.	Standard stock ponderosa pine doors.
97-42.	Electric supplementary driving and passing lamps for vehicles (after market).	121-45.	Women's slip sizes (woven fabrics).
98-42.	Artists' oil paints.	122-45.	Western hemlock plywood.
99-42.	Gas floor furnaces—gravity circulating type.	123-45.	Grading of diamond powder.
100-44.	Porcelain-enameled steel utensils (second edition).	(E)124-45.	Master disks.
101-43.	Flue-connected oil-burning space heaters equipped with vaporizing pot-type burners.	125-45.	Prefabricated homes.
102- .	(Reserved for Diesel and fuel-oil engines).	126-45.	Tank mounted air compressors.
103-42.	Cotton and rayon velour (jacquard and plain).	127-45.	Self-contained mechanically refrigerated drinking water coolers.
104-46.	Warm-air furnaces equipped with vaporizing pot-type oil burners (second edition).	128-45.	Men's sport shirt sizes—woven fabrics (other than those marked with regular neckband sizes).
105-43.	Mineral wool; loose granulated, or felted form, in low-temperature installations.	129-46.	Materials for safety wearing apparel.
106-44.	Boys' pajama sizes (woven fabrics) (second edition).	130-46.	Color materials for art education in schools.
107-45.	Commercial electric-refrigeration condensing units (second edition).	131-46.	Industrial mineral wool products, all types—testing and reporting.
		132-46.	Hardware cloth.
		133-46.	Woven wire netting.

NOTICE.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the Division of Trade Standards, National Bureau of Standards, Washington 25, D. C.